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| APPLICATION NO.  | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO.      |
|--|-------------|----------------------|---------------------|-----------------------|
| 10/722,602   | 11/28/2003  | Kouji Mitsuhashi     | 246070US2           | 8264                  |
| 22850  | 7590        | 08/17/2006           | EXAMINER            |                       |
| C. IRVIN MCCLELLAND<br>OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C.<br>1940 DUKE STREET<br>ALEXANDRIA, VA 22314 |             |                      |                     | DHINGRA, RAKESH KUMAR |
|  |             |                      | ART UNIT            | PAPER NUMBER          |
|  |             |                      | 1763                |                       |

DATE MAILED: 08/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                               |                     |  |
|------------------------------|-------------------------------|---------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b>        | <b>Applicant(s)</b> |  |
|                              | 10/722,602                    | MITSUHASHI ET AL.   |  |
|                              | Examiner<br>Rakesh K. Dhingra | Art Unit<br>1763    |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 20 June 2006.
- 2a) This action is FINAL.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-10, 12-32 and 34-38 is/are pending in the application.
- 4a) Of the above claim(s) 1-8, 16-30 and 34-37 is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 9, 10, 12-15, 31, 32 and 38 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) All    b) Some \* c) None of:
    1. Certified copies of the priority documents have been received.
    2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

|   |  |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)              |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>05/06, 06/06</u> . | 6) <input type="checkbox"/> Other: _____.  |

***Response to Arguments***

Applicant's arguments with respect to claims 9-15, 31-33 have been considered but are moot in view of the new ground(s) of rejection as explained hereunder.

Applicant has amended independent claim 9, rewritten claim 31 as an independent claim, and also amended dependent claims 13,14 and 32. Additionally claims 11, 33 have been cancelled by the applicant.

New reference has been found (US Patent No. 5,948,521, Diugosch et al) that when combined with O'Donnell et al and Fakuda et al reads on claim 9 limitations.

Accordingly claim 9 and its dependent claims 10, 12, 15 have been rejected under 35 USC 103 (a) as explained below.

Another new reference (US Patent No. 6,120,955) has been found that when combined with O'Donnell et al and Bradley et al (US patent No. 4,310,390) reads on claim 31 limitations. Accordingly claim 31 and its dependent claims 13, 14 and 32 have been rejected under 35 USC 103 (a) as explained below.

Applicant's remarks regarding double patenting have been noted and pending prosecution of copending application # 10/773245, the double patenting rejection in the current application is maintained.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

**Claims 9, 10, 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over O'Donnell et al (US PGPUB No. 2005/015,0866) in view of Fakuda et al (US PGPUB No. 2003/0113479) and Diugosch et al (US Patent No. 5,948,521).**

**Regarding Claims 9, 10:** O'Donnell et al teach an apparatus (Figures 4-6) that includes a focus ring 14 (an internal member of a plasma processing vessel), comprising: aluminum (base material); and a film formed on a surface of the base material, wherein the film has a main layer 100 formed by thermal spraying of yttria-containing coating (ceramic) and an intermediate coating (barrier coat layer) 80 formed of Al<sub>2</sub>O<sub>3</sub> (ceramic) [Paragraphs 0041, 0054, 0057, 0059, 0062-0066].

O'Donnell et al do not teach the barrier coat layer is a thermally sprayed film and at least parts of pores inside the thermally sprayed film are sealed by a resin.

Fakuda et al teach a plasma treatment apparatus (Figure 1) that includes internal members 3a, 3b, 7 that are coated with dielectric layers (thermally sprayed ceramic layers) 4a, 4b, 6. Fakuda et al further teach that a sealing treatment is carried out on top

of dielectric (barrier coat) layer to reduce the void volume (seal the pores) of the dielectric (barrier layer) coating [Paragraphs 0067- 0080].

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to seal the barrier coat layer of O'Donnell et al as taught by Fakuda et al to reduce the pores in the barrier coat layer.

O'Donnell in view of Fakuda et al teach sealing of barrier coat layer for sealing of pores in the barrier coat layer, but do not teach use of resin for sealing of barrier coat layer. Diugosch et al teach an apparatus (Figures1-3) that includes a heat sink KK that has a ceramic layer KS that has pores in it and is sealed by a resin (layer K) [column 2, lines 38-55 and column 3, line 10 to column 4, line 10].

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to seal the barrier coat layer by using resin as taught by Diugosch et al in the apparatus of O'Donnell et al in view of Fakuda et al to enable seal the barrier coat layer using low pressure (column 2, lines 45-65).

Regarding Claim 15: O'Donnell et al teach that main layer is formed of Yttria (Y<sub>2</sub>O<sub>3</sub>) {Paragraph 0041}.

**Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over O'Donnell et al (US PGPUB No. 2005/015,0866) in view of Fakuda et al (US PGPUB No. 2003/0113479) and Diugosch et al (US Patent No. 5,948,521) as applied to Claim 11 and further in view of George et al (US patent No. 4,357,387).**

Regarding Claim 12: O'Donnell et al in view of Fakuda et al and Diugosch et al teach all limitations of the claim including sealing of pores in the barrier coat layer by a resin.

O'Donnell et al in view of Fakuda et al and Diugosch et al do not teach sealing the barrier coat layer using a resin selected from the group consisting of SI ( silicone), PTFE (polytetrafluoroethylene), PI (polyimide), PM (polymideimide), PEI (polyetherimide), PBI (polybenzimidazole) and PFA (perfluoroalkoxyalkane).

George et al teach sealing of thermally sprayed refractory (includes ceramic) coating using resins including polyimide resin (Column 2, lines 55-65 and Column 7, lines 10-50).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to seal the barrier coat layer using polyimide resin as taught by George et al in the apparatus of O'Donnell et al in view of Fakuda et al and Diugosch et al obtain required proper adhesion of barrier coat layer with the base material.

**Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over O'Donnell et al (US PGPUB No. 2005/015,0866) in view of Bradley et al (US Patent No. 4,310,390) and Tokutake et al (US Patent No. 6,120,955) as applied to Claim 31 and further in view of Fakuda et al (USPGPUB No. 2003/0113479).**

Regarding Claim 13: O'Donnell et al in view of Bradley et al and Tokutake et al teach all limitations of the claim except that barrier coat layer is a thermally sprayed film and at least parts of pores inside the thermally sprayed film are sealed by a sol-gel method. Fakuda et al teach a plasma treatment apparatus (Figure 1) that includes internal members 3a, 3b, 7 that are coated with dielectric layers (thermally sprayed ceramic layers) 4a, 4b, 6. Fakuda et al further teach that a sealing treatment is carried out on top of dielectric (barrier coat) layer to reduce the void volume (seal the pores) of the dielectric (barrier layer) coating. Fakuda et al also teach that thermally sprayed ceramic

layer (barrier coat) is sealed through sol-gel method for reducing the void volume (sealing the pores in the barrier coat layer) [Paragraphs 0067-0080, 0098, 0099].

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to seal the pores in the barrier coat layer by sol-gel method as taught by Fakuda et al in the apparatus of O'Donnell et al in view of Bradley et al and Tokutake et al to reduce the pores in the barrier coat layer.

**Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over O'Donnell et al (US PGPUB No. 2005/015,0866) in view of Bradley et al (US Patent No. 4,310,390) and Tokutake et al (US Patent No. 6,120,955) as applied to Claim 31 and further in view of Panitz et al (US Patent No. 5,925,228).**

Regarding Claim 14: O'Donnell et al in view of Bradley et al and Tokutake et al teach all limitations of the claim except that sol-gel sealing treatment uses a group 3a element. Panitz et al teach an apparatus (Figures 1, 2A-2C) where a Al<sub>2</sub>O<sub>3</sub> – SiO<sub>2</sub> (Al is an element from group 3a) solution is used for sol-gel sealing treatment of porous coatings on metallic substrates to control pore size and density of ceramic coatings on the substrate (Column 3, line 5 to Column 4, line 40).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use group 3a element for sealing of coating (barrier coat layer) as taught by Panitz et al in the apparatus of O'Donnell et al in view of Bradley et al and Tokutake et al to enable control pore size and density of ceramic coatings on metal substrates.

**Claims 31, 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over O'Donnell et al (US PGPUB No. 2005/015,0866) in view of Bradley et al (US Patent No. 4,310,390) and Tokutake et al (US Patent No. 6,120,955).**

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Regarding Claims 31,38: O'Donnell et al teach all limitations of the claim (as explained above) including that main coating is formed of Y<sub>2</sub>O<sub>3</sub> and an anodized film can be formed between base material and the coating (film) and that anodized layer can be sealed. {paragraph 0043}.

O'Donnell et al do not teach parts of pores inside the anodic oxidized film are sealed by a resin selected from the group consisting of SI (silicone), PTFE (polytetrafluoroethylene), P1 (polyimide), PAI (polyamideimide), PEI (polyetherimide), PBI (polyberimidazole) and PFA (perfluoroalkoxyalkane).

Bradley et al teach an apparatus where anodized coatings are sealed using organic polymers solutions for sealing the pores in the anodic coating to improve resistance to corrosive environments (column 1, lines 15-45 and column 4, lines 25-60).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to seal anodized layer using organic polymers as taught by Bradley et al in the apparatus of O'Donnells et al to obtain improved corrosion resistance for aluminum substrates.

O'Donnell et al in view of Bradley et al do not teach that for sealing of anodic oxidized film, the resin is selected from the group consisting of SI (silicone), PTFE (polytetrafluoroethylene), P1 (polyimide), PAI (polyamideimide), PEI (polyetherimide), PBI (polyberimidazole) and PFA (perfluoroalkoxyalkane).

Tokutake et al teach an apparatus (Figure 1) that includes a substrate 1 that is anodized. Tokutake et al further teach that since the anodized layer has a porous portion, the same is sealed using polyimide resin (column 3, lines 55-60 and column 6, lines 59-65).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use polyimide resin for sealing the pores in the anodized layer as taught by Tokutake et al in the apparatus of O'Donnell et al in view of Bradley et al to improve the durability of anodized layer.

**Claim 32 is rejected under 35 U.S.C. 103(a) as being unpatentable over O'Donnell et al (US PGPUB No. 2005/015,0866) in view of Bradley et al (US Patent No. 4,310,390) and Tokutake et al (US Patent No. 6,120,955) as applied to Claim 31 and further in view of Horita et al (US Patent No. 5,892,278).**

Regarding Claim 32: O'Donnell et al in view of Bradley et al and Tokutake et al teach all limitations of the claim including that pores in anodic oxidized film are sealed, but do not teach sealing using an aqueous solution of metal salt.

Horita et al teach a method (Figures 1, 2) that includes formation of anodic oxidized film on semiconductor chip radiator 1 and where the anodic film is sealed in a nickel salt solution in water (Column 5, line 50 to Column 6, line 10).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to seal the pores in the anodic oxidized film by using an aqueous solution of metal salt as taught by Horita et al in the apparatus of O'Donnell et al to in view of Bradley et al and Tokutake et al enable clog micropores in the anodic oxidized film (Column 5, lines 60-65).

#### ***Double Patenting***

Claims 9-14 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 5, 17-22 of copending Application No. 10/773, 245 (Sasaki et al). Although the conflicting claims are not identical, they

are not patentably distinct from each other because except for claim 9 in the instant application and claims 5, 17 in the copending application, the remaining claims (claims 10-14 in the instant application and claims 18-22 in the copending application) are identical. Claim 5 of copending application recites a "ring member" whereas claim 9 of application recites "an internal member" and thus claim 5 of copending application is narrower and thus anticipates claim 9 of application, which is broader.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a). A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rakesh K. Dhingra whose telephone number is (571)-272-5959. The examiner can normally be reached on 8:30 -6:00 (Monday - Friday).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on (571)-272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Rakesh Dhingra

  
Parviz Hassanzadeh  
Supervisory Patent  
Examiner Art Unit 1763